

REMARKS

35 U.S.C. § 103(a)

I. Claims 1-4 and 7

Claims 1-4 and 7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee et al. (US 6,670,628) and Ovshinsky (US 6,087,674) (hereinafter referred to as "Ovshinsky '674"), considered together.

Applicant amends claim 1 to show that at least one of the electrodes has at least two field amplifier structures for amplifying a field strength of the electric field in the changeover material. The Specification supports these amendments at least at paragraph [0065], as well as in Figures 5E, 6C, and 7D. Applicant also amends claim 1 to include the feature recited in claim 2 and cancels claim 2.

Lee discloses a single electrode projecting into the phase change material. Ovshinsky '674 discloses an electrode adjacent to the phase change material. Even assuming a motivation to combine Lee and Ovshinsky '674 exists, the combination of Lee and Ovshinsky '674 does not disclose a nonvolatile memory element comprising an electrode having at least two field amplifier structures that project into the changeover material.

For the above reasons, the Applicant respectfully submits that claims 1-4 and 7, as amended, are not unpatentable over Lee and Ovshinsky '674. The Applicant respectfully requests removal of the rejection of these claims under 35 U.S.C. § 103(a).

II. Claim 5

Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee and Ovshinsky '674 in view of Reinberg (US 6,284,643) and Plaettner et al. (US 4,292,343).

Claim 5 depends from claim 4. The office action relies on Reinberg and Plaettner to show a hydrogen-saturated amorphous semiconductor material. As discussed above, the combination of the Lee and Ovshinsky '674 does not disclose all the limitations of claim 1-4 as amended. The addition of Reinberg and Plaettner does not cure this deficiency. Even assuming a motivation to combine Lee, Ovshinsky '674, Reinberg and Plaettner exists, this combination does not disclose a nonvolatile memory

element comprising an electrode having at least two field amplifier structures that project into the changeover material.

For the above reasons, the Applicant respectfully submits that claim 5 is not unpatentable over Lee and Ovshinsky '674 in view of Reinberg and Plaettner. The Applicant respectfully requests removal of the rejection of this claim under 35 U.S.C. § 103(a).

III. Claim 6

Claim 6 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee and Ovshinsky '674 in view of Ovshinsky et al. (US 5,687,112) (hereinafter referred to as "Ovshinsky '112").

Claim 6 depends from claim 1. The office action relies on Ovshinsky '674 to show a multilayer construction for the phase change material. As discussed above, the combination of the Lee and Ovshinsky '674 does not disclose all the limitations of claim 1 as amended. The addition of Ovshinsky '112 does not cure this deficiency. Even assuming a motivation to combine Lee, Ovshinsky '674, and Ovshinsky '112 exists, this combination does not disclose a nonvolatile memory element comprising an electrode having at least two field amplifier structures that project into the changeover material.

For the above reasons, the Applicant respectfully submits that claim 6 is not unpatentable over Lee and Ovshinsky '674 in view of Ovshinsky '112. The Applicant respectfully requests removal of the rejection of this claim under 35 U.S.C. § 103(a).

IV. Claims 22-24

Claims 22-24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee and Ovshinsky '674 in view of Ovshinsky et al. (US 5,166,758) (hereinafter referred to as "Ovshinsky '758").

Claims 22-24 are each directed to a memory element arrangement having a multiplicity of nonvolatile memory elements as claimed in claim 1. The office action relies on Ovshinsky '756 to show matrix addressing of nonvolatile memory cells as claimed in claim 1. As discussed above, the combination of Lee and Ovshinsky '674 does not disclose all the limitations of claim 1 as amended. The addition of Ovshinsky '758 does not cure this deficiency. Even assuming a motivation to combine Lee,

Ovshinsky '674, and Ovshinsky '112 exists, this combination does not disclose a memory element arrangement having a multiplicity of nonvolatile memory elements comprising an electrode having at least two field amplifier structures that project into the changeover material.

For the above reasons, the Applicant respectfully submits that claims 22-24 are not unpatentable over Lee and Ovshinsky '674 in view of Ovshinsky '758. The Applicant respectfully requests removal of the rejection of these claims under 35 U.S.C. § 103(a).

New Claims

This amendment adds new claims 25-38, including independent claims 25 and 32. Claims 25-31 are generally directed to a nonvolatile memory element having two electrically conductive electrodes, where each electrode has at least one field amplifier structure for amplifying field strength of the electric field in the changeover material. The Specification supports this amendment at least at Paragraphs [0046] – [0049], as well as in Figure 4A. Claims 32-38 are generally directed to a nonvolatile memory element having changeover material, where the changeover material is programmed to a first state by a first voltage and to a second state by a second voltage, where the first and second voltages are of opposite polarity. The Specification supports this amendment at least a Paragraph [0047]. Applicant respectfully submits that the asserted combinations do not disclose all the limitations of claims 25-38.

SUMMARY

Applicant amends claims 1, 3, and 23, cancels claim 2, and adds new claims 25-38. No new matter is entered through these amendments. The amendment to claims 3 and 23 address informalities. Applicant respectfully requests the Examiner grant allowance of this application. The Examiner is invited to contact the undersigned attorneys for the Applicant via telephone if such communication would expedite this application.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Rickard K. DeMille", written over a horizontal line.

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